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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/005,325	11/12/2001	William C. Hurley	C0012	9482

21495 7590 06/29/2004

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EXAMINER	
ARTMAN, THOMAS R	

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/005,325	HURLEY ET AL.	
	Examiner	Art Unit	
	Thomas R Artman	2882	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 June 2004*.

2a) This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,12,13,15-20 and 22-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-9 and 28* is/are allowed.

6)☒ Claim(s) *10,12,13,15-20,22-27 and 29-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 23, 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witt (US 6,445,859) in view of Goldmann (US 4,684,214).

Regarding claim 23, Witt discloses an optical fiber cable (Fig.1), including:

1) at least one bundle of optical fibers (item 20) and a binder element (item 30) that keeps the optical fibers in at least one bundle,

2) an armor layer (item 90) surrounding at least one bundle and is adjacent to the bundle, and

3) the fiber optic cable excludes a cable jacket inside the armor layer.

Witt does not disclose that the binder element includes a silicone wax emulsion finish.

Goldmann teaches a wax finish with silicone additives used to coat fiber jackets such that the coefficient of friction is reduced for improved feeding of a cable through conduit (col.2, lines 4-6 and 57-61). This way, damage caused by wear and abrasion is reduced, thus improving the longevity of the cable.

Though Goldmann coats an outer jacket rather than a binder element, one skilled in the art would readily recognize that such materials would be suitable for other parts of an optical fiber cable that need to move freely, and therefore minimize damage due to wear and abrasion.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for Witt to use a silicone was emulsion finish to coat the binder element for minimizing damage due to wear and abrasion.

With respect to claim 24, the fibers of Witt's cable are non-tight buffered.

With respect to claim 27, Witt has a cable jacket (item 40) generally surrounding the armor layer.

Claims 10, 12, 13, 15, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witt in view of Goldmann and Carter (US 5,165,003).

Regarding claim 10, Witt discloses an optical fiber cable (Fig.1), including:

1) at least one bundle of non-tight buffered optical fibers (item 20),

2) a separation layer (item 90) adjacent to and generally surrounding the at least one bundle,

3) a cable jacket (item 40) contacting at least a portion of the separation layer where the separation layer inhibits adhesion between the at least one bundle and the cable jacket, and

4) excluding a grease or grease-like composition being in contact with the at least one bundle that is used for water blocking.

Witt does not specifically disclose binder threads for encircling the fibers in order to maintain the individual bundles. Witt does state in col.2, lines 47-53, that the buffer tubes (item 30) are not necessary, and that such tubeless bundles are known in the art.

Carter teaches the use of binder threads for keeping non-tight buffered optical fibers in bundles (Fig.1, item 18). The use of the threads allows for a loose construction that prevents microbending losses, a better method for holding the optical fibers into bundles without unraveling during splicing and other procedures, and a simple, efficient labeling system for distinguishing fiber bundles (col.5, line 49, to col.6, line 21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Witt to substitute binder threads for buffer tubes in order to maintain the fibers in at least one bundle. This allows for the advantages of a loose construction that prevents microbending losses, a better method for holding the optical fibers into bundles without unraveling during splicing and other procedures, and a simple, efficient labeling system for distinguishing fiber bundles as taught by Carter.

Further regarding claim 10, Carter does not disclose that the binder thread includes a silicone wax emulsion finish.

Goldmann teaches a wax finish with silicone additives used to coat fiber jackets such that the coefficient of friction is reduced for improved feeding of a cable through conduit (col.2, lines

4-6 and 57-61). This way, damage caused by wear and abrasion is reduced, thus improving the longevity of the cable.

Though Goldmann coats an outer jacket rather than a binder element, one skilled in the art would readily recognize that such materials would be suitable for other parts of an optical fiber cable that need to move freely, and therefore minimize damage due to wear and abrasion.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for Witt to use a silicone was emulsion finish to coat the binder thread for minimizing damage due to wear and abrasion.

With respect to claims 12 and 13, Carter's binder threads include a looper thread and needle thread that incorporate to encircle the optical fibers in a bundle and are secured to one another through the use of overlocked stitches.

With respect to claim 15, it is clear from the disclosure of Witt that the cable is intended for the use of a breakout cable, that is to say, a cable that is meant to be readily accessed for splicing, etc.

With respect to claims 25 and 26 and as stated above in the rejection of claim 10, it would have been obvious to one of ordinary skill in the art at the time the invention was made for Witt to substitute binder threads for buffer tubes in order to maintain the fibers in at least one bundle. This allows for the advantages of a loose construction that prevents microbending losses, a better method for holding the optical fibers into bundles without unraveling during

splicing and other procedures, and a simple, efficient labeling system for distinguishing fiber bundles as taught by Carter.

Claims 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witt in view of Goldmann and Blew (5,345,526).

Regarding claim 16, Witt discloses an optical fiber cable (Fig.1), including:

1) at least one bundle of non-tight buffered optical fibers (item 20) with a binder element (item 30) that maintains the fibers in the at least one bundle,

2) a cable jacket surrounding the at least one bundle (item 40),

3) a separation layer (item 90) that inhibits adhesion between the cable jacket and optical fiber bundle and is adjacent to the optical fiber bundles, and

4) excluding a grease or grease-like compound that is used to repel water.

Witt does not disclose the use of a central member.

Blew teaches the use of a central member (item 12) that provides strength and relieves stresses from the optical fibers. In this way, the optical fibers will last longer and perform better.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the fiber optic cable of Witt to have a central member as taught by Blew such that greater strength of the cable can be achieved while optical fiber performance and longevity is improved.

Further regarding claim 16, Witt does not disclose that the binder element includes a silicone wax emulsion finish.

Goldmann teaches a wax finish with silicone additives used to coat fiber jackets such that the coefficient of friction is reduced for improved feeding of a cable through conduit (col.2, lines 4-6 and 57-61). This way, damage caused by wear and abrasion is reduced, thus improving the longevity of the cable.

Though Goldmann coats an outer jacket rather than a binder element, one skilled in the art would readily recognize that such materials would be suitable for other parts of an optical fiber cable that need to move freely, and therefore minimize damage due to wear and abrasion.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for Witt to use a silicone was emulsion finish to coat the binder element for minimizing damage due to wear and abrasion.

With respect to claim 22, Witt's separation layer is an armor layer.

Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witt, Goldmann and Blew, as applied to claim 16 above, in view of Carter.

Regarding claims 17 and 18, Witt, Goldmann and Blew do not specifically disclose binder threads for encircling the fibers in order to maintain the individual bundles. Witt does state in col.2, lines 47-53, that the buffer tubes (item 30) are not necessary, and that such tubeless bundles are known in the art.

Carter teaches the use of binder threads for keeping non-tight buffered optical fibers in bundles (Fig.1, item 18). The use of the threads allows for a loose construction that prevents microbending losses, a better method for holding the optical fibers into bundles without unraveling during splicing and other procedures, and a simple, efficient labeling system for distinguishing fiber bundles (col.5, line 49, to col.6, line 21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the optical fiber cable of Witt, using the central member of Blew, to substitute binder threads for buffer tubes in order to maintain the fibers in at least one bundle. This allows for the advantages of a loose construction that prevents microbending losses, a better method for holding the optical fibers into bundles without unraveling during splicing and other procedures, and a simple, efficient labeling system for distinguishing fiber bundles as taught by Carter.

With respect to claims 19 and 20, Carter's binder threads include a looper thread and needle thread that incorporate to encircle the optical fibers in a bundle and are secured to one another through the use of overlocked stitches.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Witt, Goldmann and Carter, as applied to claim 10 above, in view of Navé (US 6,167,178).

Witt, Goldmann and Carter do not disclose the use of tight-buffered optical fiber bundles in conjunction with the "loose tube," or "loose buffered," optical fiber bundles.

Navé teaches such a practice in col.4, lines 11-24. Here, Navé specifically states that it is known in the art to have tight and loose optical fiber bundles in one cable in order to provide a more compact structure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include tight-buffered optical fiber bundles in the Witt/Goldmann/Carter fiber optic cable such that the cable can be made smaller.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Witt, Goldmann and Blew, as applied to claim 16 above, in view of Navé.

Witt, Goldmann and Blew do not disclose the use of tight-buffered optical fiber bundles in conjunction with the "loose tube," or "loose buffered," optical fiber bundles.

Navé teaches such a practice in col.4, lines 11-24. Here, Navé specifically states that it is known in the art to have tight and loose optical fiber bundles in one cable in order to provide a more compact structure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include tight-buffered optical fiber bundles in the Witt/Goldmann/Blew fiber optic cable such that the cable can be made smaller.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Witt and Goldmann, as applied to claim 23 above, in view of Navé.

Witt does not disclose the use of tight-buffered optical fiber bundles in conjunction with the "loose tube," or "loose buffered," optical fiber bundles.

Navé teaches such a practice in col.4, lines 11-24. Here, Navé specifically states that it is known in the art to have tight and loose optical fiber bundles in one cable in order to provide a more compact structure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include tight-buffered optical fiber bundles in the Witt/Goldmann/Blew fiber optic cable such that the cable can be made smaller.

Allowable Subject Matter

Claims 1-9 and 28 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record neither teaches nor reasonably suggests an optical fiber cable that has a separation layer in contact with the bundle of optical fibers and the cable jacket as required by the combination of claim 1.

Claims 2-9 and 28 are allowed by virtue of their dependency.

Response to Arguments

Applicant's arguments, see Response, filed June 3rd, 2004, with respect to the rejection(s)of claim(s) 10, 16 and 23 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Goldmann.

There is an important note that the examiner wishes to address. The applicant asserted that Lochkovic is not relevant to the applicant's invention, since it is related to fiber ribbons rather than binder threads. The examiner respectfully disagrees. Lochkovic's teachings are quite relevant to the applicant's invention. As stated in the rejections in all previous Office actions, Lochkovic uses silicone-based materials to coat certain parts within an optical fiber cable such that lower coefficients of friction are achieved between the parts for obvious advantages. The applicant's invention is also using silicone-based materials to coat certain parts within an optical fiber cable in order to reduce coefficients of friction between the parts for the same reasons. Which part is coated doesn't matter. The teachings provide a reasonable suggestion to the skilled artisan that a silicone-based material is a useful material to coat binder elements/threads in an optical fiber cable in order to improve cable performance by reducing frictional wear between the binder and the optical fibers with a reasonable expectation of success.

However, as pointed out by the applicant, Lochkovic's materials are not silicone wax emulsion finishes, but UV curable epoxies with silicone additives. This significant difference and the criticality given by the applicant on p.10 of the response for using the wax finish overcome the previous 35 USC 103(a) rejections over Lochkovic.

The same issue arises with the new reference, Goldmann. Goldmann uses the same material for the same reason, though on a different part of the cable. However, the new rejections of claims 10, 16 and 23 above state that Goldmann teaches two important, specific facts: 1) coatings of silicone wax emulsion finishes are used in optical fiber cable construction, and 2) the purpose is for reducing frictional wear for improved cable performance. Therefore, it

is the examiner's conclusion that these teachings provide a reasonable suggestion to the skilled artisan that a silicone wax emulsion finish is a useful material to coat binder elements/threads in an optical fiber cable in order to improve cable performance by reducing frictional wear.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Calzolari (US 4,932,746) teaches silicone wax finishes as anti-adhesion layers (low coefficient of friction) such that removing material from the fibers is easier.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas R Artman whose telephone number is (571) 272-2485. The examiner can normally be reached on 9am - 6:30pm Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas R. Artman
Patent Examiner

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER